

# COMPUTER SCIENCE

Missouri Department of Elementary and Secondary Education



## WHAT IS COMPUTER SCIENCE?

Computer science is the study of computers and algorithmic processes, including their principles, their hardware and software designs, their implementation, and their impact on society (*Tucker et.al, 2006, p.2*). Computer science focuses on understanding why computers work and how to create those technologies.

## WHAT ARE THE MISSOURI COMPUTER SCIENCE PERFORMANCE STANDARDS?

The Missouri Computer Science Performance Standards identify the learning expectations for students to help ensure they acquire the skills and knowledge needed to become ready for success. The standards also provide an avenue for promoting consistency in what is taught to students across our state—from district to district, school to school, and classroom to classroom.

The standards are not curriculum. Curriculum is determined by the local education agency (LEA). The standards do not necessitate the creation of a specific computer science course; they can be incorporated into existing classes and subject areas where appropriate. However, this does not preclude the LEA from choosing to create specific computer science courses.

Whether integrating the performance standards into existing curriculum or teaching it as a standalone course, teachers must meet the teacher qualification requirements. It is important that they are able to effectively teach computer science as well as clearly communicate the value of computer science for student learning. The LEA should support teachers in attending differentiated computer science-focused professional development events to help them meet their particular needs.

## COMPUTER SCIENCE REQUIREMENTS

In accordance with Section 170.018 of Senate Bill (SB) 681 and SB 718, each public high school and charter high school shall offer at least one computer science course in an in-person setting or as a virtual or distance course option. The computer science course offered must:

1. Be of high quality as defined by the state board of education.
2. Meet or exceed the [Missouri Computer Science Performance Standards](#).
3. Be offered in such school's course catalog.

The following courses meet or exceed Missouri's Computer Science Performance Standards. Course descriptions can be found on the [Computer Science website](#).

Missouri Computer Science Courses		
Course Code	Course Name	Program Area
034355	Computer Programming	Business Education
034400	Computer Science I	Business Education
034401	Computer Science II	Business Education
991195	AP Computer Science A	Business Education or Misc.
991196	AP Computer Science: Principles	Business Education or Misc.
100432	Computer Science A	PLTW
100415	Computer Science Principles	PLTW
100416	Computer Science Essentials	PLTW
991105	Computer Science	Misc.
991093	IB Computer Science	Misc.

## REQUIRED TEACHING QUALIFICATIONS

1. Teachers are considered appropriately certified to teach computer science to students in grades K-6 if they have any current certificate for the grade level(s) in which they are teaching.
2. Teachers who are teaching a computer science course for any type of approved high school credit for students in grades 7-12 are required to meet DESE'S approved computer science qualifications as outlined in #3.
3. To be eligible to teach computer science courses in grades 7-12, a person must possess either **A** or **B** shown below:
  - A. A Missouri-issued teaching certificate at the appropriate grade level with
    - i. a passing score on the DESE-designated computer science assessment and DESE-issued computer science certificate; or
    - ii. a bachelor's or master's degree in computer science or some other computer science related four-year degree; or
    - iii. documented completion of a DESE-approved computer science training program or postsecondary course
      - a. *Refer to the Computer Science Approved Trainings and Courses document found on the [Computer Science homepage](#) for the complete list of approved trainings.*
  - B. A Visiting Scholar Certificate and **one** of the following criteria, i, ii, or iii.
    - i. An associate's degree in computer science and
      - a. an industry-recognized credential (IRC) in computer science, or
      - b. an IRC in a computer science related field, or
    - ii. A passing score on the DESE-designated computer science assessment, or
    - iii. Documented completion of a DESE-approved computer science training program or postsecondary course
      - a. *Refer to the Computer Science Approved Trainings and Courses document found on the [Computer Science homepage](#) for the complete list of approved trainings.*

## USING COMPUTER SCIENCE TO FULFILL ACADEMIC CREDIT IN OTHER SUBJECTS

Section 170.018, RSMo allows a student to fulfill up to one unit of academic credit toward high school graduation with a district-approved computer science course for any mathematics, science, or practical arts unit required for high school graduation. This does not change any graduation requirement. This change is to require universities to accept it toward admissions for science or practical arts credit.

LEAs that choose to allow students in grades 7-12 to earn mathematics, science, or practical arts credits by taking a district-approved computer science course must follow the procedures shown in Section 170.018, RSMo pertaining to parental notice and permission and End-of-Course assessment requirements. DESE has provided an example of a parental notice and permission slip in the *Graduation Requirements for Students in Missouri Public School. (2018). Appendix a: Statutory Requirements Related to Course Work and Instruction Computer Science (Section 170.0180, RSMo) Sample Computer Science Acknowledgement. (page 24 of Graduation Handbook)*

## MOSIS REPORTING FOR COMPUTER SCIENCE

There is a field in the June Student Course Completion file where schools must identify the type of credit earned by a student who has taken a district-approved computer science course for mathematics or science credit. Schools must also designate *computer science (mathematics)* or *computer science (science)* on transcripts for college entry use.

## COMPUTER SCIENCE EDUCATION FUND

Legislation created the **Computer Science Education Fund**, which allows the State Board of Education to award grants to eligible entities for the purpose of providing teacher professional development programs relating to computer science, contingent upon funding.

### Purpose

This grant provides eligible entities the opportunity to be reimbursed for expenses associated with computer science. Eligible entities are defined as

- (a) An LEA, or a consortium of LEAs in the state, including charter schools that have declared themselves LEAs; or
- (b) An institution of higher education in the state; or
- (c) A nonprofit or private provider of nationally recognized and high-quality computer science professional development, as determined by DESE (must be on approved list).

### Allowable Uses of Funds

Grant recipients will utilize funding to:

- (a) Reach new and existing teachers with little computer science background;
- (b) Use effective practices for professional development;
- (c) Focus the training on the conceptual foundations of computer science;
- (d) Reach and support historically underrepresented students in computer science;
- (e) Provide teachers with concrete experience with hands-on, inquiry-based practices; and
- (f) Accommodate the particular needs of students and teachers in each local education agency.

### Program Structure

The [application](#) is completed by the eligible entity. It must be approved before the eligible entity can be reimbursed. The [reimbursement](#) form must be submitted by June 15, regardless if the training has occurred. Training must be completed on or before June 30.

The revenue code for the Computer Science Education Grant is “5397 Other State Revenue.” However, DESE did not create a project code for this grant. Thus, the LEA will need to create their own local project code for the expenditures incurred from the state funded Computer Science Education Grant.

### Contact Information

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## SOURCES OF INFORMATION CONTAINED IN THIS DOCUMENT

Section 160.526, RSMo - In establishing, evaluating, modifying, and revising the academic performance standards and learning standards and the statewide assessment system, the state board of education shall consider the work that has been done by the following:

- a. Other states
- b. Recognized regional and national experts
- c. Professional education discipline-based associations
- d. Other professional education associations
- e. The Department of Higher Education’s curriculum alignment initiative

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